

## CLAIMS:

1. An apparatus (1) for assisting the diagnostic evaluation of images (7) of a potentially pathological structure (8), containing:
  - a) an analysis module (6), with which a set (9) of characteristic, structure-related parameters ( $p_1^0, p_2^0, \dots$ ) can be established from an image (7) of the structure (8);
  - 5 b) a database module (3), which contains stored data records (4) relating to structures of the same kind, which data records document respective examples with their associated characteristic parameters ( $p_1, p_2, \dots$ ) and with additional information ( $q_1, q_2, \dots$ ), wherein for a predetermined set (9) of characteristic parameters ( $p_1^0, p_2^0, \dots$ ) the database module (3) is able to establish those of said data records (4) whose characteristic parameters
  - 10 ( $p_1, p_2, \dots$ ) lie close to the predetermined set (9);
  - c) an output module (2), for further processing of the established data records (4).
2. An apparatus as claimed in claim 1, characterized in that the images (7) of the structure (8) are X-ray images, MRI images or ultrasound images.
- 15 3. An apparatus as claimed in claim 1, characterized in that the structure (8) is a potential tumor.
4. An apparatus as claimed in claim 1, characterized in that the parameters ( $p_1, p_2, \dots; p_1^0, p_2^0, \dots$ ) related to the structure (8) comprise at least one of the following variables: volume, compactness, eccentricity, needle-shape, edge contrast, homogeneity, opacity distribution, texture of the surrounding parenchyma, number of supplying blood vessels, body region being imaged, as well as patient-related data such as age, sex and/or risk group.
- 20 5. An apparatus as claimed in claim 1, characterized in that the additional information ( $q_1, q_2, \dots$ ) comprises diagnostic results, especially biopsies, and/or disease courses.
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6. An apparatus as claimed in claim 1, characterized in that a metric is defined on the area of the characteristic parameters ( $p_1, p_2, \dots; p_1^0, p_2^0, \dots$ ).

7. An apparatus as claimed in claim 1, characterized in that the data records (4) 5  
comprise at least one image of the associated structure.

8. An apparatus as claimed in claim 1, characterized in that it contains a display 10  
device (5) for displaying an image (7) of the structure (8) and/or information from data records (4).

9. An apparatus as claimed in claim 1, characterized in that it contains input 10  
means for an interactive analysis of the image (7) of the structure in the analysis module (6).

10. A method for assisting the diagnostic evaluation of images (7) of a potentially 15  
pathological structure (8), comprising the following steps:

a) setting up a database (3), which contains data records (4) that relate to such a structure and document respective examples with associated characteristic parameters ( $p_1, p_2, \dots$ ) of the structure plus additional information ( $q_1, q_2, \dots$ );

b) establishing a set (9) of characteristic parameters ( $p_1^0, p_2^0, \dots$ ) that are related 20  
to the potentially pathological structure (8);

c) establishing data records (4) from the database (3), the accompanying characteristic parameters ( $p_1, p_2, \dots$ ) of which data records lie close to the set (9) of parameters established in step b).